

RESPONSE UNDER 37 C.F.R. § 1.116
U.S. Application No. 09/436,520

Summary of Status of Amendments and Office Action

Claims 7 to 11 are presently pending in the application, claims 7, 10 and 11 being independent.

In the Final Office Action, claims 7 to 11 are rejected under 35 U.S.C. § 102(b) as being anticipated by Del Rossi et al. (U.S. Patent No. 5,108,969). Claims 7 to 11 are also rejected under 35 U.S.C. § 103(a) as being unpatentable over Del Rossi et al. (U.S. Patent No. 5,108,969).

Response to the Rejection of Claims 7 to 11 under 35 U.S.C. § 102(b)

Claims 7 to 11 are rejected under 35 U.S.C. § 102(b) as being anticipated by Del Rossi et al. (U.S. Patent No. 5,108,969).

In the Office Action, page 2, lines 9 to 13, the Examiner states that the Del Rossi et al. patent discloses a catalyst composition useful in hydrocarbon conversion processes and that the Del Rossi et al. patent, column 8, lines 37 to 46 and claim 1, "teaches and claims an MCM-22 zeolite having a group VIII metal and tin thereon". The Examiner acknowledges that Del Rossi et al. do not "specifically teach the metal ruthenium" but rather teaches Group VIII metals. In the Office Action at page 4, lines 16 to 20, the Examiner further states:

In this case, Del Rossi et al. clearly teaches a catalyst comprising a MCM-22 zeolite, a Group VIII noble metal, and a promoter such as tin. One of ordinary skill would at once recognize that there are only 9 Group VIII metals and would further be able to "at once envisage" every member and combination taught by the reference.

Based on this reasoning, the Examiner concludes that Del Rossi et al. describe, within the meaning of 35 U.S.C. § 102(b), the specific catalyst composition recited in claims 7 to 11.

Applicants respectfully disagree with the Examiner's position.

Applicants submit that Del Rossi et al, as a matter of law, cannot anticipate the present claims, because the Del Rossi et al. patent specification does not provide any guidance directing one skilled in the art to the specific

RESPONSE UNDER 37 C.F.R. § 1.116
U.S. Application No. 09/436,520

catalyst recited in claims 7 to 11; i.e., contrary to the Examiner's position, one skilled in the art would not have envisaged the specific catalyst of claims 7 to 11.

The Examiner's attention is directed to the recitations of Applicants' independent claims. In particular, independent claim 7 recites a catalyst comprising a first metal having hydrogenation activity in the form of ruthenium; a second metal selected from zinc, tin, nickel and cobalt; and a crystalline inorganic oxide material having a particular X-ray diffraction pattern. Independent claim 10 recites a catalyst comprising MCM-22 zeolite; ruthenium; and tin. Independent claim 11 recites a catalyst comprising a crystalline inorganic oxide material having a particular X-ray diffraction pattern; ruthenium; and tin.

As the Examiner correctly noted Applicants' catalyst must contain at least these three components.

The Del Rossi et al. specification describes catalysts, which have two components, i.e., MCM-22, and a Group VIII metal, and which can have another optional element, which can be tin, indium, thallium, lead and/or sulfur.

Applicants acknowledge that the first component of the Del Rossi et al. composition, MCM-22, is a species within the genus, recited in claims 7 and 11, which circumscribes a crystalline inorganic oxide material having a particular X-ray diffraction pattern. Consequently, Del Rossi et al. specifically describe one component of the recited catalysts of independent claims 7, 10 and 11.

To arrive at a catalyst, which would fall within the scope of independent claims 7, 10 and 11, Applicants submit that one skilled in the art must pick and choose two additional components, namely, ruthenium from the nine metals of the Group VIII metals and tin from the five other optional elements. Consequently, Del Rossi et al. describe 45 (9 possible metals of Group VIII X 5 possible optional elements) different catalysts, one of which can be a species of the catalysts recited in claims 7, and 11 and can be the catalyst of claim 10. The Examiner, however, has not shown where the Del Rossi et al. specification provides any guidance to direct the skilled worker to select the particular species

RESPONSE UNDER 37 C.F.R. § 1.116
U.S. Application No. 09/436,520

out of the genus of 45 catalysts so as to fall within the scope of Applicants' claims. In fact, Applicants submit that there is no such guidance. The Examiner's attention is directed to Del Rossi et al., column 8, lines 15 to 18, which state:

The Group VIII noble metals and their compounds, e.g., platinum, palladium, iridium, rhenium and rhodium, or combinations thereof can be used. The preferred metals are platinum and palladium and of these, platinum is the most preferred.

More importantly, the Examiner should note that while there are nine Group VIII metals, Del Rossi et al. only specifically disclose five of them and do not disclose ruthenium. Further, Del Rossi et al. state that the preferred metals are platinum and palladium, with platinum being the most preferred. Thus, Applicants submit that Del Rossi et al. teach away from the use of ruthenium. The Examiner's attention is also directed to the Del Rossi et al. examples, and in particular, examples 16 to 18, which only disclose the use of platinum. Consequently, Applicants submit that Del Rossi et al. do not direct one skilled in the art to Applicants' recited Group VIII metal, ruthenium. In fact, as noted above, Del Rossi et al. teach away from the use of ruthenium.

With respect to the third component of the catalyst recited in independent claims 7, 10 and 11, i.e., tin, Applicants submit that the Del Rossi et al. specification does not direct those skilled in the art to select tin as the third component of the catalyst composition. In this regard, Del Rossi et al., column 8, lines 37 to 41, disclose:

In order to further enhance the selectivity of the low acidity, Group VIII metal species-containing MCM-22 catalyst of this invention, the catalyst **can be** further associated with one or more species of elements such as tin, indium, thallium, lead and/or sulfur [Emphasis added.]

Applicants submit that the third component is optional and not necessary for the Del Rossi et al. invention. In this regard, the Examiner's attention is also

RESPONSE UNDER 37 C.F.R. § 1.116
U.S. Application No. 09/436,520

directed to the Del Rossi et al. examples, and in particular, examples 16 to 18, which disclose the use of platinum. Nowhere do examples 16 to 18 disclose the use of the optional third component, such as tin, indium, thallium, lead and/or sulfur. Consequently, Applicants submit that Del Rossi et al. do not have a preference for this third component and thus would not direct one skilled in the art to Applicants' recited third component, tin.

Applicants submit that for a reference with a generic disclosure to serve as an anticipation of a species falling within the scope of Applicants' claims, there must be some guidance to direct those skilled in the art to arrive that species. See, for example, In re Petering, 301 F.2d 676, 133 USPQ 275 (CCPA 1962) and In re Baird, 29 USPQ2d 1550 (Fed. Cir. 1994).

In Petering, the Petering claims were rejected over the Karrer patent, which disclosed a broad genus, embracing the genus of Petering's claims. The Court noted at 133 USPQ 279 that even though Petering's claimed compounds are encompassed by the broad generic disclosure of Karrer, the generic Karrer disclosure by itself did not describe Petering's claimed invention. However, the Court noted that Karrer also discloses certain specific preferences for the moieties, X, Y, Z, P, R and R' of its genus through its eight examples. According to the Court, these 8 examples with their preferences would describe a class of 20 compounds, i.e., X, P and R' always being one moiety; Y and Z being 2 moieties; and R being 5 moieties, resulting in (2 X 2 X 5) 20 possible compounds. See 133 USPQ 279, where the Court tabulated the eight compounds. The Court affirmed the rejection of the Petering generic claims 1, 2, 4, 7 and 10, because Karrer describes a compound falling within their scope, but reversed the rejection of claims 5, 11 and 12, because the compounds recited in these claims are not described in Karrer.

In Baird, the Baird claims were directed to a flash fusible toner comprising a bisphenol A polyester. The Baird claims were rejected under 35 U.S.C. 103 as being unpatentable over the Knapp patent, which disclosed a generic formula, which encompassed bisphenol A. The Court noted at 29 USPQ2d 1552 that

RESPONSE UNDER 37 C.F.R. § 1.116
U.S. Application No. 09/436,520

"[w]hile the Knapp formula unquestionably encompasses bisphenol A when specific variables are chosen, there is nothing in the disclosure of Knapp suggesting that one should select such variables," the Court also noting that Knapp had a preference for diphenols that are different from and more complex than bisphenol A. Accordingly, the Court reversed the rejection.

Applicants submit that Petering and Baird are controlling and that under the principles of Petering and Baird, the present claims cannot be anticipated by Del Rossi et al., because Del Rossi et al. merely set forth a generic disclosure, without any guidance or preference for selecting ruthenium and tin. The Del Rossi et al. examples, in particular, examples 16 to 18, disclose the preferred use of platinum and do not disclose the use of any optional third element such as tin, indium, thallium, lead and/or sulfur, much less tin as recited in the claims. Thus, Applicants submit that there is no guidance in Del Rossi et al. to direct those skilled in the art to the specific catalysts of Applicants' claims.

Applicants note that the Examiner relies upon the Ex parte A, 17 USPQ2d 1716 (Bd. Pat. App. & Int. 1990) and upon In re Schaumann, 572 F.2d 312, 197 USPQ 5 (CCPA 1978). Applicants submit that the reliance is misplaced and that under the facts of this case, the Petering and Baird cases are controlling.

In the decision of Ex parte A, 17 USPQ2d 1716 (Bd. Pat. App. & Int. 1990), the panel of the Board found at page 1718 that "the name of the compound disclosed [in the reference] corresponds to the formula presented in appellants' claim 1." Consequently, the panel of the Board held that claim 1 was anticipated. Applicants submit that the situation in Ex parte A is different from that here, because Del Rossi et al. do not specifically disclose the instant claimed catalysts.

In In re Schaumann, 572 F.2d 312, 197 USPQ 5 (CCPA 1978), Schaumann's claims on appeal were drawn to a single compound and certain pharmacologically compatible salts, the compound being DL-1-(3-hydroxyphenyl)-2-ethylaminopropane (HEP) [Emphasis added]. The claims to HEP were rejected as anticipated by Hildebrandt. The Court noted at 197 USPQ

RESPONSE UNDER 37 C.F.R. § 1.116
U.S. Application No. 09/436,520

7 that the only compound falling with the generic general formula of Hildebrandt is a lower adjacent homologue of HEP, namely **methy**l. The Court also noted that the structural formula of Hildebrandt's claim 1 contains but a single variable, R, which is defined as 'lower alkyl radical, and that the expression 'alkyl radical,' as set forth in the Hildebrandt specification, includes, *inter alia*, ethyl. In affirming the rejection based on anticipation, the Court stated at 197 USPQ 9,

When we consider also that claim 1 of the Hildebrandt patent, read in conjunction with the specification given the expression "alkyl radical" in the specification, embraces a very limited number [7] of compounds closely related to one another in structure, we are led inevitably to the conclusion that the reference provides a description of those compounds just as surely as if they were identified in the reference by name. Since one of the compounds thus described is HEP, we agree with the examiner and the majority of the board that appellants' right to a patent thereon is barred under 35 USC 102(b).

Applicants submit that the facts described in Schaumann, are entirely different from those here, because the Hildebrandt prior art reference in Schaumann described 7 compounds, one of which was identical to the compound recited in the claims on appeal.

In the present case, the Del Rossi et al. patent broadly discloses 45 different catalysts, one of which can be identical to the catalyst of independent claim 10 and can fall within the genus of catalysts recited in independent claims 7 and 11, provided that the skilled worker properly picks and chooses the components without any guidance in order to arrive at this single catalyst. Further, the Hildebrandt prior art reference in Schaumann also showed a preference for lower alkyl compounds, thus leading the skilled worker to envisage the ethyl moiety, since the Hildebrandt prior art reference indicated that the alkyl moieties included ethyl. In this case, while the Del Rossi et al. patent states that Group VIII metals are to be used in its catalyst, the Del Rossi et al. patent does

RESPONSE UNDER 37 C.F.R. § 1.116
U.S. Application No. 09/436,520

not list, **and therefore does not envisage**, ruthenium as one of the 9 Group VIII metals to be used, but rather lists platinum, palladium, iridium, rhenium and rhodium, or combinations thereof, with a preference for platinum and palladium and of these, platinum being the most preferred. Further with respect to the third component of the catalyst recited in independent claims 7, 10 and 11, i.e., tin, the Del Rossi et al. specification does not direct those skilled in the art to select tin as the third component of the catalyst composition. In this regard, as noted above, while Del Rossi et al. state that tin, indium, thallium, lead and/or sulfur can be used, the third component is optional and not necessary for the Del Rossi et al. invention. In this regard, the Examiner's attention is also directed to the Del Rossi et al. examples, and in particular, examples 16 to 18, which disclose the use of platinum without any third component and to Del Rossi et al.'s patent claim 1.

For the foregoing reasons, Applicants respectfully submit that contrary to the Examiner's position on page 3 of the Office Action, Del Rossi et al. do not teach "a class of metals sufficiently limited to constitute anticipation." Rather, as shown above by Applicants, Del Rossi et al. cannot anticipate the present claims. Accordingly, Applicants respectfully request that the Examiner withdraw the rejection.

Response to the Rejection of Claims 7 to 11 under 35 U.S.C. § 103(a)

Claims 7 to 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Del Rossi et al. (U.S. Patent No. 5,108,969).

In the Office Action, the Examiner states that the Del Rossi et al. patent is applied in the same manner as in the rejection under 35 U.S.C. § 102(b). The Examiner further states at page 3, line 18 to page 4, line 5:

If in fact it is considered that the reference [Del Rossi et al.] does not disclose the claimed composition with sufficient specificity to constitute anticipation, it is the position of the examiner that the claims would have been obvious to one of ordinary skill in the art. If

RESPONSE UNDER 37 C.F.R. § 1.116
U.S. Application No. 09/436,520

the prior art does not in fact anticipate the instant claims, then the claims would have been obvious to one of ordinary skill in the art. Ex parte Lee, 31 USPQ2d 1105.

In this case, Del Rossi et al. does not disclose the use of the specific metal, ruthenium but teaches the generic group of compounds, "Group VIII metal". The claims differ from the reference by reciting a specific species and a more limited genus than the reference. However, it would have been obvious to one having ordinary skill in the art at the time of the invention to select any of the species taught by the reference, including those of the claims, because an ordinary artisan would have the reasonable expectation that any of the species of the genus would have similar properties and, thus, the same use as the genus as a whole.

Applicants respectfully disagree with the Examiner's position.

Applicants submit that the Examiner has not established a *prima facie* case of obviousness and that if the Examiner has done so, then Applicants have rebutted that case with evidence which shows unexpected results.

Applicants rely upon the arguments made above in their response to the rejection under 35 U.S.C. § 102(b) over Del Rossi et al. In summary, Applicants pointed out that Del Rossi et al. embrace 45 catalyst compositions, one of which can fall within the scope of claims 7 to 11. Further, Del Rossi et al. do not provide any guidance to direct those skilled in the art to select ruthenium out of the 9 Group VIII metals and to select tin as the third component out of tin, indium, thallium, lead and sulfur in order to obtain a catalyst composition falling within the scope of the catalyst compositions recited in claims 7 to 11.

Notwithstanding the foregoing arguments, Applicants submit that Del Rossi et al. teach away from the claimed invention, because Del Rossi et al. do not disclose the use of ruthenium as one of its Group VIII metals, but rather disclose the use of platinum, palladium, iridium, rhenium and rhodium, or combinations thereof, with a preference for platinum and palladium and of these,

RESPONSE UNDER 37 C.F.R. § 1.116
U.S. Application No. 09/436,520

platinum being the most preferred. Nowhere do Del Rossi et al. mention the use of ruthenium. Applicants submit that the clear import that one can surmise from the teachings of Del Rossi et al. is that the use of iron, cobalt, nickel, osmium and ruthenium is not either useful or preferred in the Del Rossi et al. invention.

If a *prima facie* of obviousness has been established, which it has not, then Applicants rely upon unexpected results. In this regard, Applicants direct the Examiner's attention to the specification at pages 6 to 8, which set forth Examples 1 to 13. In particular, the Examiner's attention is directed to Examples 8 to 10, which are side by side comparisons, the data being present in Table 1. Example 8 uses a catalyst comprising MCM-22, Pt and Sn; whereas Example 9 uses a catalyst comprising MCM-22, Ru and Sn. The Example 9 catalyst falls within the scope of the present claims. The Example 8 catalyst is outside of the scope of the present claims. As the Examiner noted in the Office Action at page 4, lines 3 to 5, "an ordinary artisan would have the reasonable expectation that any of the species of the genus would have similar properties and, thus, the same use as the genus as a whole," i.e., one would expect that any catalyst composition comprising MCM-22, Sn and anyone of the 9 Group VIII would be expected to have the same activity. However, the data show that a catalyst composition comprising MCM-22, Ru and Sn (Example 9) exhibits better results than a catalyst composition comprising MCM-22, Pt and Sn (Example 8, which uses Del Rossi et al.'s preferred Group VIII metal). The Example 9 catalyst yields 25.3 weight% of hexylbenzene as compared to the Example 8 catalyst which yields 1.5 weight%. Applicants respectfully submit that these results demonstrate unexpected results and rebut the case of *prima facie* obviousness, if the Examiner has established such a case.

For the foregoing reasons, Applicants respectfully request that the Examiner withdraw the rejection.

RESPONSE UNDER 37 C.F.R. § 1.116
U.S. Application No. 09/436,520

CONCLUSION

For the reasons advanced above, Applicants respectfully submit that all pending claims patentably define Applicants' invention. Allowance of the application with an early mailing date of the Notice of Allowance and allowability is therefore respectfully requested.

Should the Examiner have any further comments or questions, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,



Darryl M. Tyus
Reg. No. 40,853
Attorney for the Applicants
281-834-2581

Darryl M. Tyus
ExxonMobil Chemical Company
4500 Bayway Drive
Baytown, Texas 77520-9728